

11334

Ind.

Emerson®

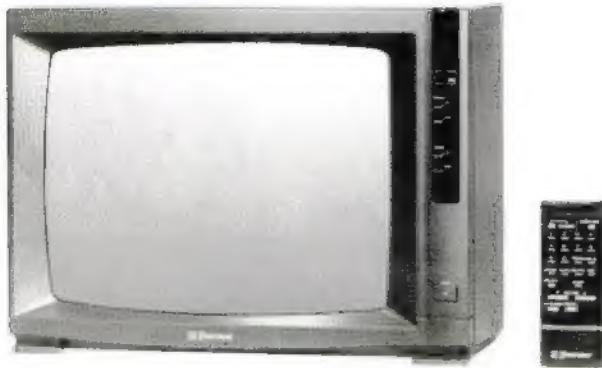
SERVICE MANUAL

MODEL
TC1966D

CAUTION

Before servicing the chassis, read the "IMPORTANT SERVICE SAFETY INFORMATION" on page 2 of

CORRECTION NOTICE
IN TC1365 FILE



SPECIFICATIONS

AC POWER INPUT	120V ± 10% 60Hz
AC POWER CONSUMPTION	102 Watts @ 120V
PICTURE SIZE	19" (MEASURED DIAGONALLY)
FOCUS LENS	Bipotential
AUDIO POWER OUTPUT RATING	2.0 Watts
FREQUENCY RESPONSE	250Hz 0±3dB 6kHz -2--10dB
SPEAKER SIZE	4" 0.36 oz. Magnet
VOICE COIL IMPEDANCE	8 ohms at 600Hz
ANTENNA INPUT IMPEDANCE	75 ohm. Coaxial Input
RECEIVING CHANNELS	
VHF	2-13
UHF	14-69
CATV	1 (5A) 95-99 (A5-A1) 14-22 (A-I) 23-36 (J-W) 37-65 (AA-FFF) 66-125 (GGG-125)

INTERMEDIATE FREQUENCY	
Picture IF Carrier Frequency	45.75MHz
Sound IF Carrier Frequency	41.25MHz
Color Sub-Carrier Frequency	42.17MHz
WEIGHT	42 lbs
DIMENSIONS	21-9/16" (W)x15-13/16" (H)x18-11/16" (D)

19" REMOTE CONTROL COLOR
TELEVISION WITH ON-SCREEN
PICTURE ADJUSTMENTS

AKB AUTOMATIC KINE BIAS

CONTENTS

IMPORTANT SERVICE SAFETY INFORMATION	2
ELECTRICAL ADJUSTMENTS	
1. BEFORE MAKING ELECTRICAL ADJUSTMENT	3
2. BASIC ADJUSTMENT	
2-1. VIF AND DET	3
2-2. RF AGC	4
2-3. CUT OFF	4
2-4. FOCUS	4
2-5. VERTICAL SIZE	4
2-6. VERTICAL POSITION	4
2-7. HORIZONTAL POSITION	4
2-8. SUB BRIGHT	4
2-9. SUB COLOR	4
2-10. SUB TINT	5
2-11. CONSTANT VOLTAGE	5
2-12. HORIZONTAL SIZE (BAR INDICATOR)	5
3. PURITY AND CONVERGENCE ADJUSTMENT	5
3-1. STATIC CONVERGENCE(ROUGH ADJUSTMENT)	5
3-2. PURITY	5
3-3. STATIC CONVERGENCE	6
3-4. DYNAMIC CONVERGENCE	6
HOW TO RESET THE MICROCOMPUTER	6
MAJOR COMPONENTS LOCATION GUIDE	7
SEMICONDUCTOR BASE CONNECTIONS	8
BLOCK DIAGRAM	9
PRINTED CIRCUIT BOARDS	
MAIN/CRT/EARPHONE	10
SCHEMATIC DIAGRAM	
IF/MICON	11
CHROMA/POWER/AUDIO	12
DEFLECTION	13
TUNER	14
MECHANICAL EXPLODED VIEW/PARTS LIST	14
ELECTRICAL REPLACEMENT PARTS LIST	15, 16
INTERCHANGEABLE PARTS LIST	16

SERVICE PUBLICATION

#02-92

IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is $32kV \pm 1.0kV$ at zero beam current with a line voltage of 120V AC. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by Δ in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charges from it by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube dag and 2nd anode lead (have AC line cord

disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

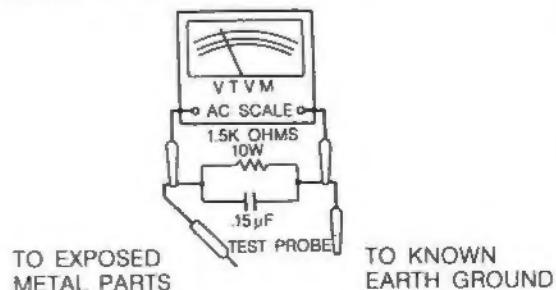
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a $0.15\mu F$ capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

Use an isolation transformer when performing any service on this chassis.

Before removing the anode cap, discharge electricity because it contains high voltage.

When removing a PCB, related component or after unfastening or changing a wire, be sure to put it back in its original position.

Inferior silicon grease can damage IC's and transistors. When replacing IC's and transistors, use only specified silicon grease (YG6260M). Remove all old silicon before applying new silicon.

1-1: Prepare the following measurement tools for electrical adjustments.

1. Sweepmarker Generator
2. VIF/SIF Unit
3. Oscilloscope (2 Channel Type)
4. Digital Voltmeter
5. AC Voltmeter
6. Color Bar Generator

2. BASIC ADJUSTMENTS

2-1: VIF AND DET

NOTE

Connect input and output terminals of the sweepmarker generator to the circuit as shown in Fig. 2-1-a, then adjust it.

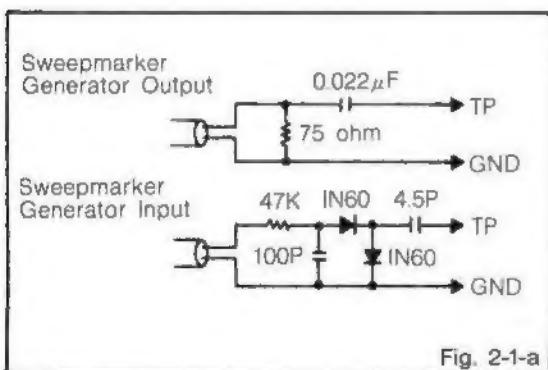
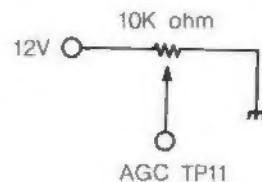


Fig. 2-1-a

1. Connect output terminal of the sweepmarker generator to TP of the tuner pack. (Connect a 2.7K ohm resistor between them.)
2. Connect input terminal of the sweepmarker generator to TP4.

3. Connect the 10K ohm variable resistor to IF AGC terminal (TP11), 12V line and ground, then adjust to make the waveform of the oscilloscope readable.



4. Adjust L205 until the waveform marker (45.75MHz) becomes as shown in Fig. 2-1-b.

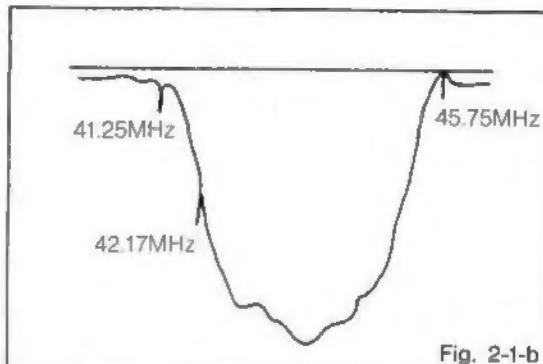


Fig. 2-1-b

5. Confirm the waveform marker (42.17MHz) becomes as shown in Fig. 2-1-c.

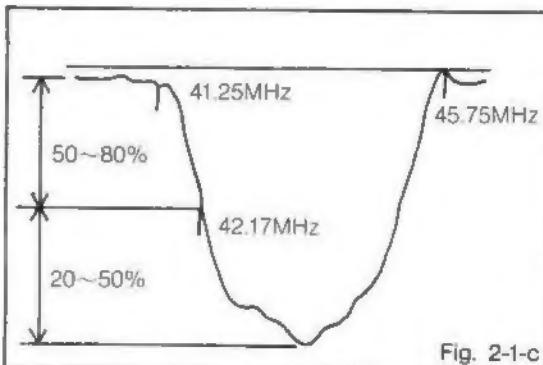


Fig. 2-1-c

6. Connect the AFT adjustment oscillator (45.75MHz) to the tuner pack TP through a 2.7K ohm resistor.
7. Connect a 1M ohm resistor between the digital voltmeter's positive probe and TP6.
8. Adjust L204 until the voltage of TP6 is 4.5VDC.

ELECTRICAL ADJUSTMENTS

2-2: RF AGC

NOTE

Adjust after performing adjustments in section 2-1.

2-2-A: In case of weak electric field.

1. Tune to a noisy channel.
2. Adjust VR201 until noise is at minimum.
3. Change the channel, confirm other channels are normal.

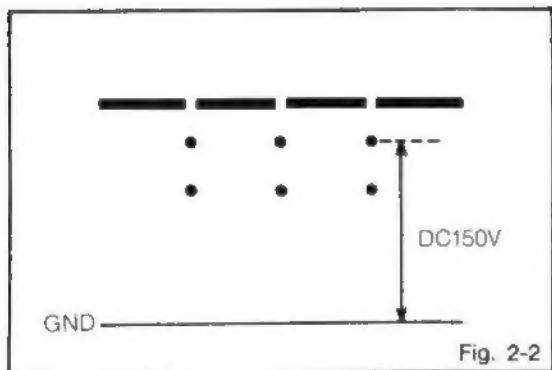
2-2-B: In case of strong electric field.

(Radio frequency interference can cause diagonal streaks to appear.)

1. Adjust VR201 until diagonal streaks are at minimum.
2. If there is still a problem after adjusting VR201, install an attenuator to the antenna terminals, then repeat step 1.
3. Confirm noise does not appear.
4. Change the channel, confirm other channels are normal.

2-3: CUT OFF

1. Receive the color bar pattern.
2. Using the remote control, set contrast and brightness to minimum position.
3. Connect the oscilloscope to TP24.
4. Adjust the screen control until voltage is 150VDC. (Refer to Fig. 2-2)



2-4: FOCUS

1. Receive the broadcasting signal.
2. Adjust the focus control until picture is distinct.

2-5: VERTICAL SIZE

1. Receive the crosshatch pattern from the color bar generator.
2. Adjust the brightness and contrast controls until the crosshatch pattern is distinct.
3. Adjust VR401 until the center of crosshatch is square.
4. Receive broadcasting signal, then confirm picture is normal.

2-6: VERTICAL POSITION

1. Receive the color bar pattern.
2. Using the remote control, set contrast and brightness to maximum position.
3. Adjust VR402 until horizontal line of the color bar comes to approximate center of the CRT.

2-7: HORIZONTAL POSITION

1. Receive the color bar pattern.
2. Adjust VR403 until the color width of both screen edges are equal.
3. Receive broadcasting signal, then confirm picture is normal.

2-8: SUB BRIGHT

NOTE

Adjust after performing adjustments in section 2-3.

1. Receive the monochrome pattern.
2. Adjust VR101 until 0% of gray scale begins to lighten.

2-9: SUB COLOR

1. Receive the color bar pattern.
2. Using the remote control, set contrast to maximum position.
3. Using the remote control, set brightness, tint and color to center position.
4. Connect the oscilloscope to TP22.
5. Adjust VR102 until the waveform becomes as shown in Fig. 2-3.

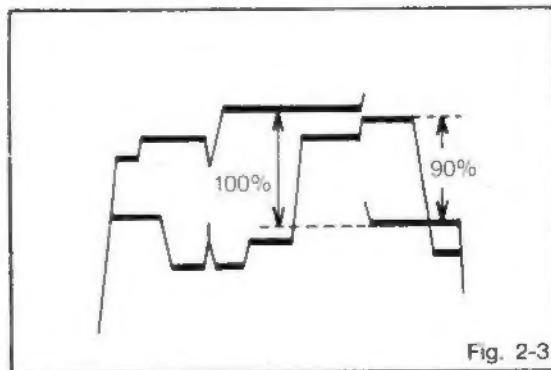


Fig. 2-3

ELECTRICAL ADJUSTMENTS

2-10: SUB TINT

1. Receive the color bar pattern.
2. Using the remote control, set contrast to maximum position.
3. Using the remote control, set brightness, tint and color to center position.
4. Connect the oscilloscope to TP23.
5. Adjust VR103 until the waveform becomes as shown in Fig. 2-4.

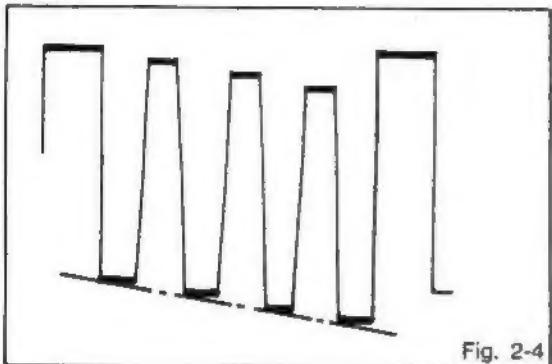


Fig. 2-4

2-11: CONSTANT VOLTAGE

1. Receive the broadcasting signal.
2. Using the remote control, set brightness, volume and contrast to minimum position.
3. Connect the digital voltmeter to TP8.
4. Adjust VR501 until the voltage is 130VDC.

2-12: HORIZONTAL SIZE (BAR INDICATOR)

1. Receive the broadcasting signal.
2. Select the sharpness setting of the picture.
3. Adjust L101 until both sides of characters are inside the screen.

3. PURITY AND CONVERGENCE ADJUSTMENT

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a degauss coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. (Refer to Fig. 3-1) If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

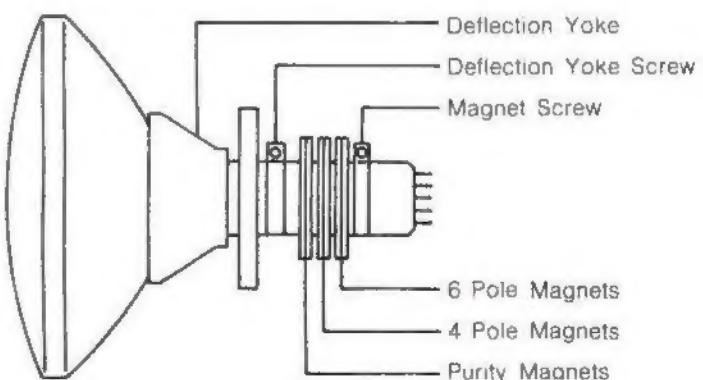


Fig. 3-1

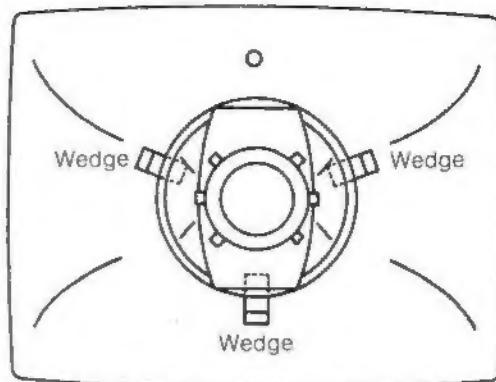
ELECTRICAL ADJUSTMENTS

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.



Wedge Position

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. (Refer to Fig. 3-2-a)
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. (Refer to Fig. 3-2-b)

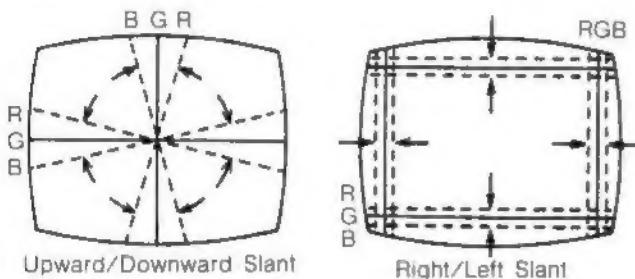


Fig. 3-2-a

Fig. 3-2-b

HOW TO RESET THE MICROCOMPUTER

CONDITIONS

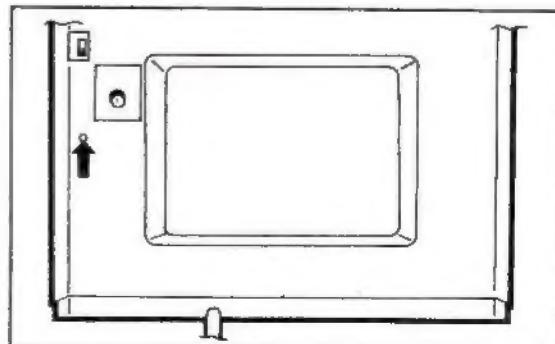
- * When resetting the memory function, use the reset switch. This switch will reset the following:
 1. Auto channel memory.
 2. Micon error movement.
 3. Sound level.

PROCEDURE

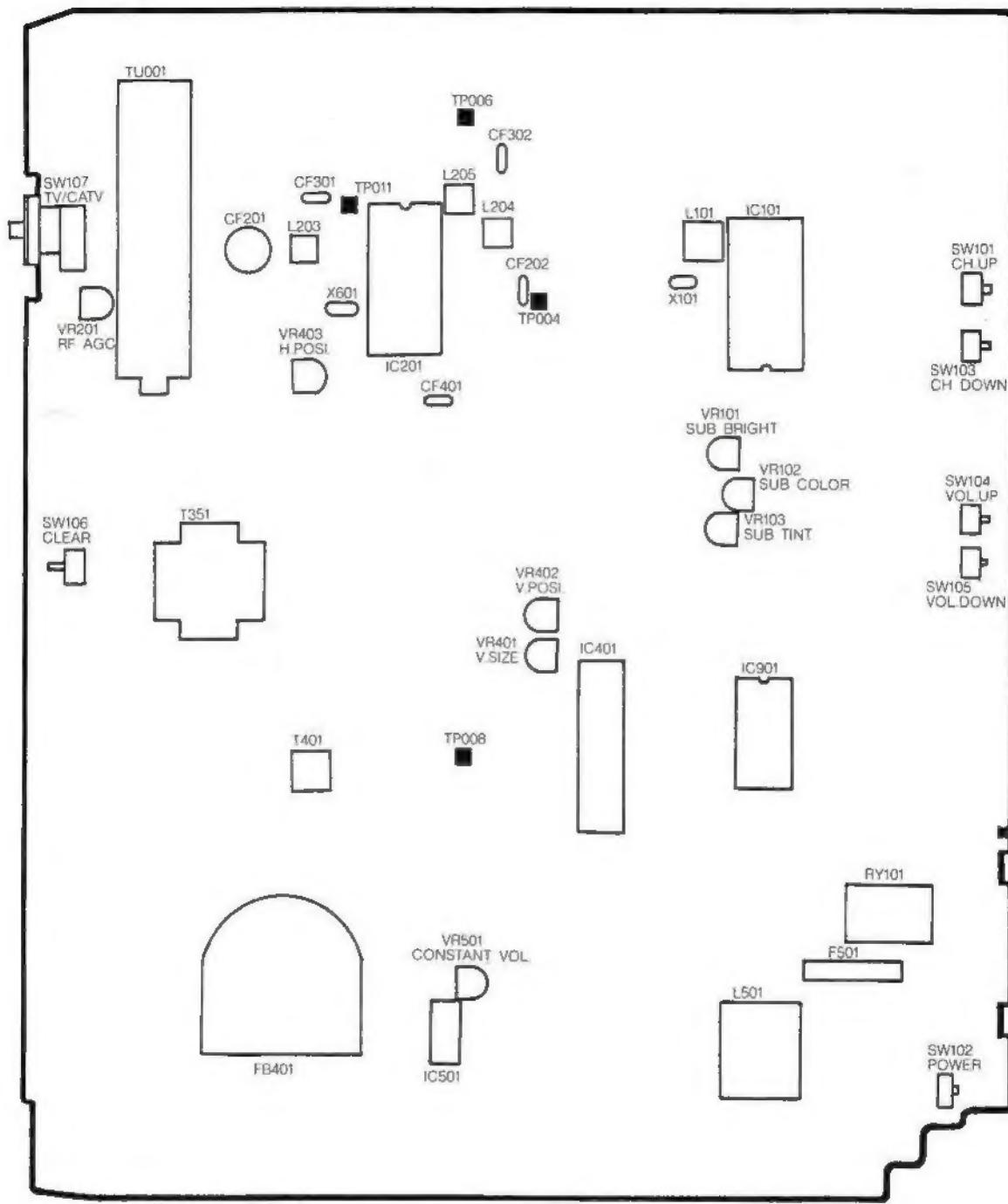
1. The reset switch is accessed through an unmarked hole, which is shown by an arrow in the illustration.
2. The unit is reset when a long, narrow probe (eg, the end of a paper clip) is inserted into the hole.

NOTE

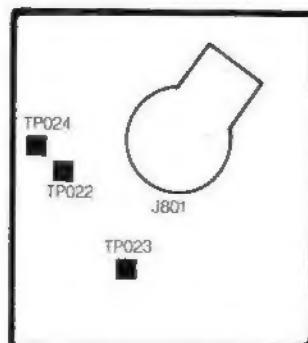
When using the reset switch, make sure you are properly grounded.



MAJOR COMPONENTS LOCATION GUIDE

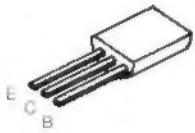
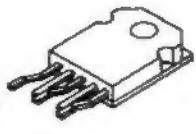
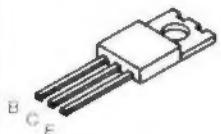
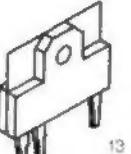
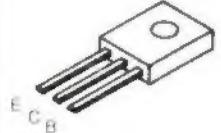
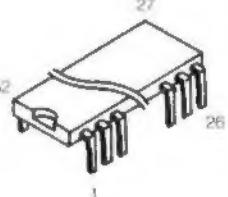
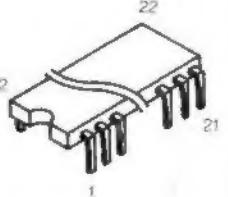
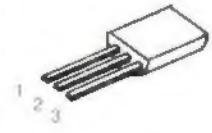
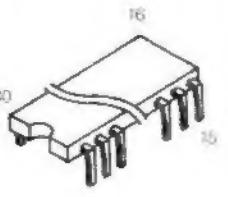
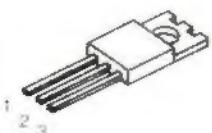


MAIN P.C.BOARD

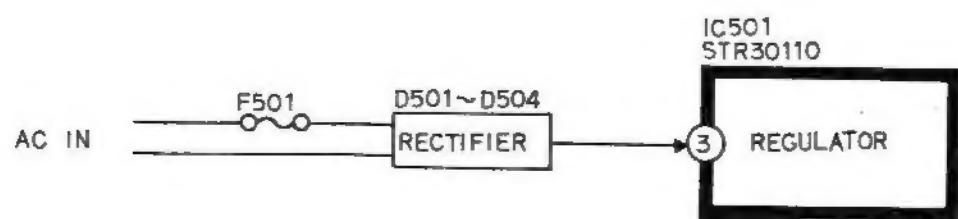
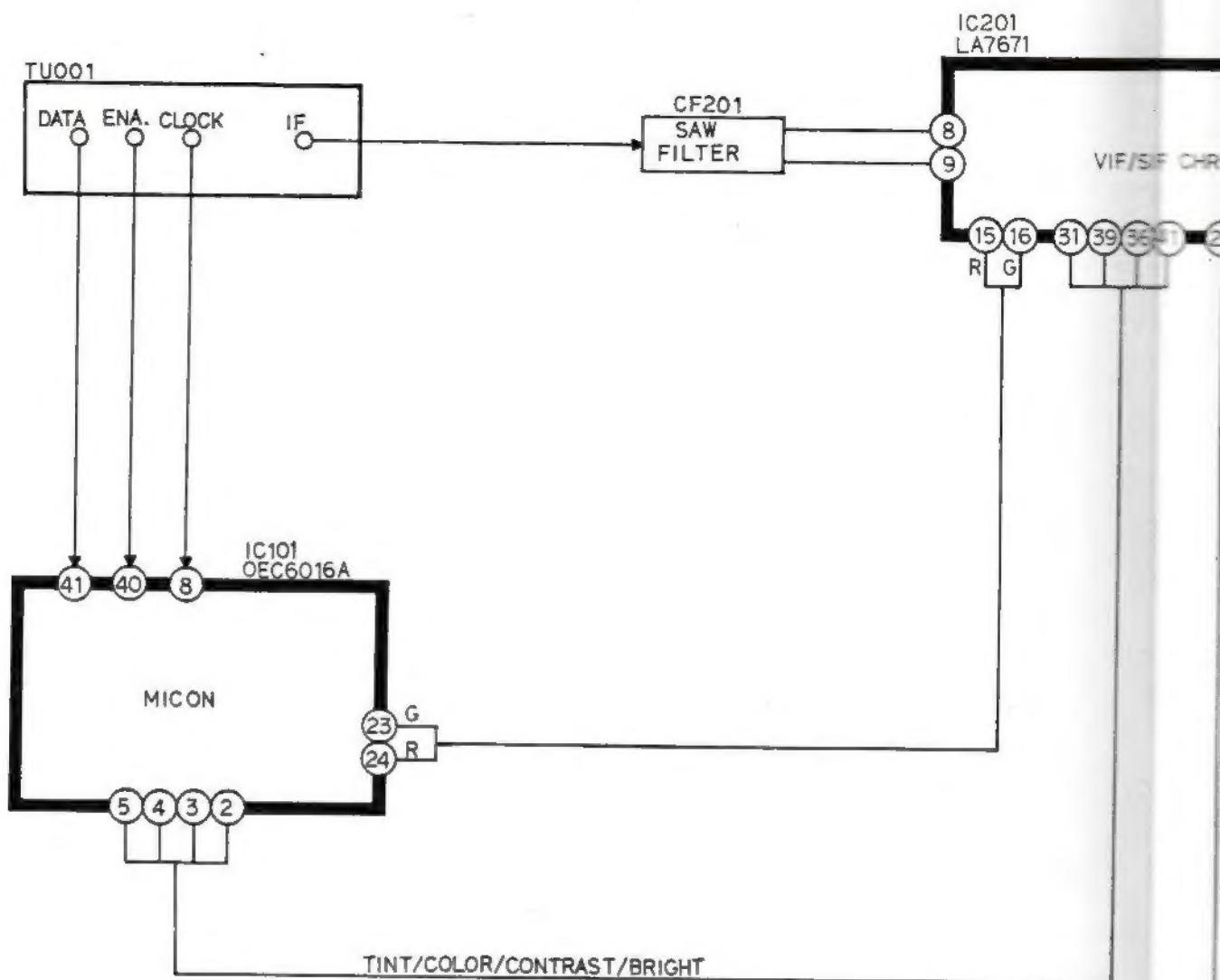


CRT P.C.BOARD

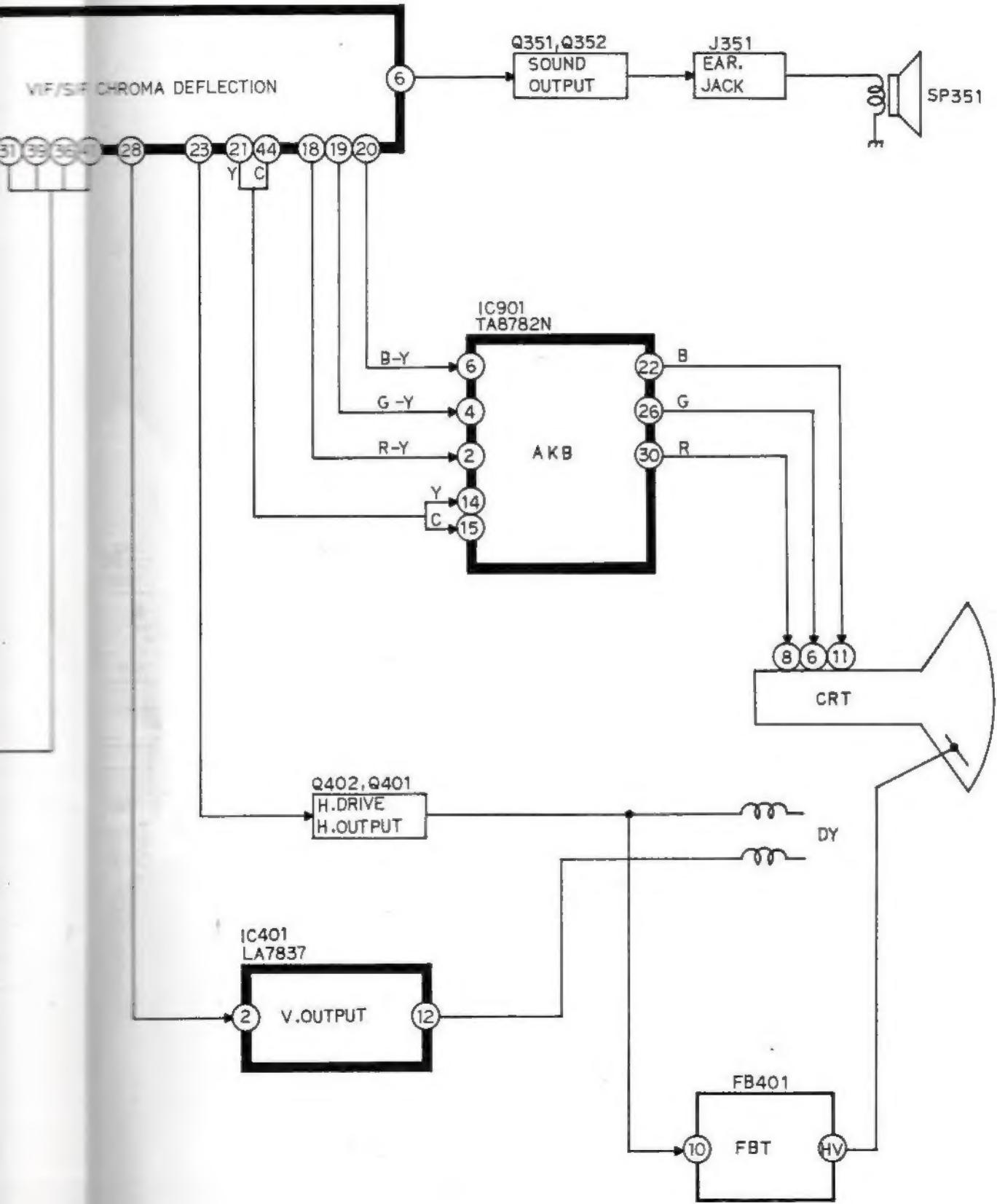
SEMICONDUCTOR BASE CONNECTIONS

ILLUSTRATION	DESCRIPTION	ILLUSTRATION	DESCRIPTION
	2SA952 2SC2271 2SA1624 2SC945A 2SA733		STR30110
	2SC4159		LA7837
	2SC2621E		
	2SC4217		LA7871
	2SD2333		OEC6016A
	UPC78L06J-TI		TA8782N
	L78M09-SA		

BLOCK DIAGRAM

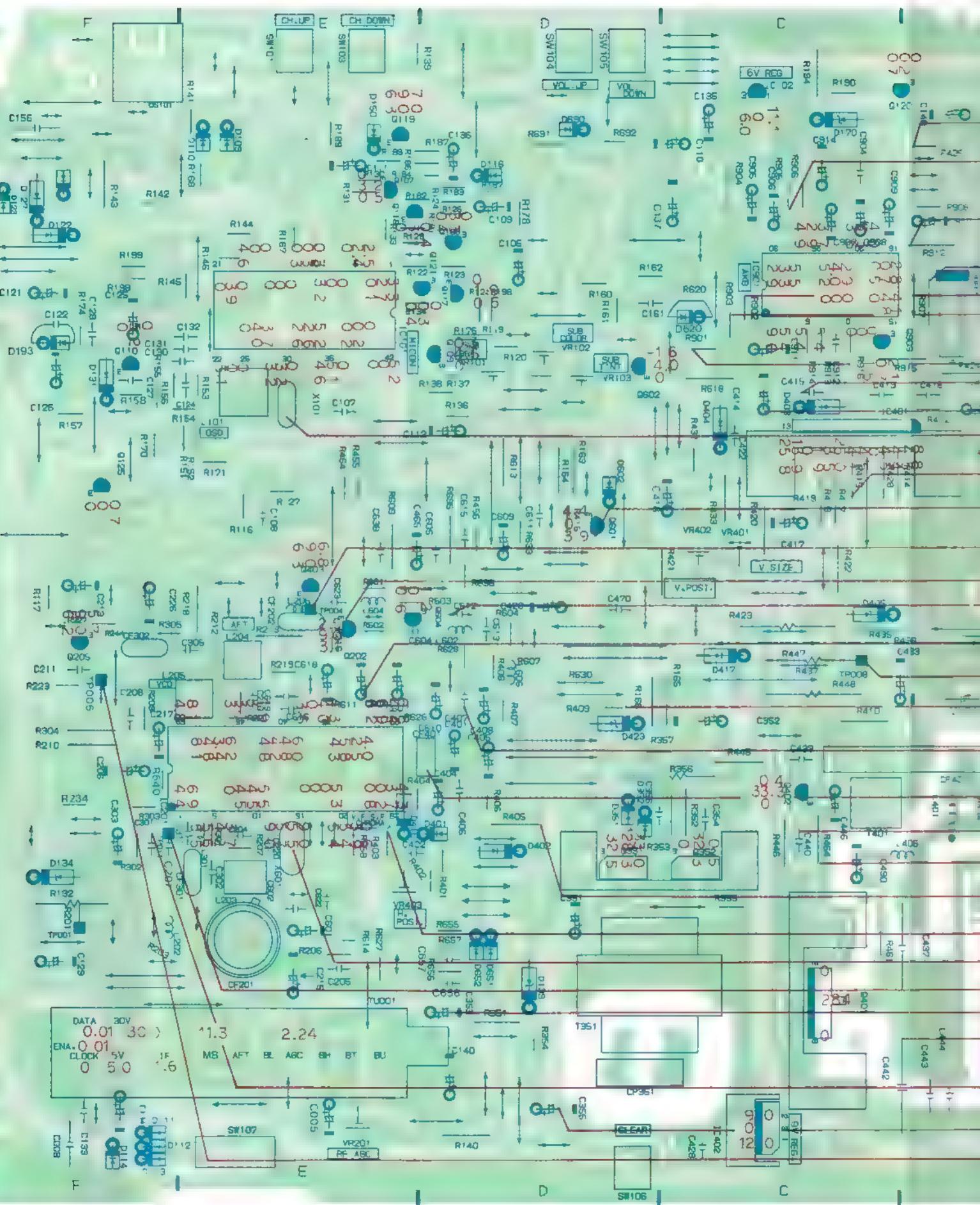


CIRCUIT DIAGRAM

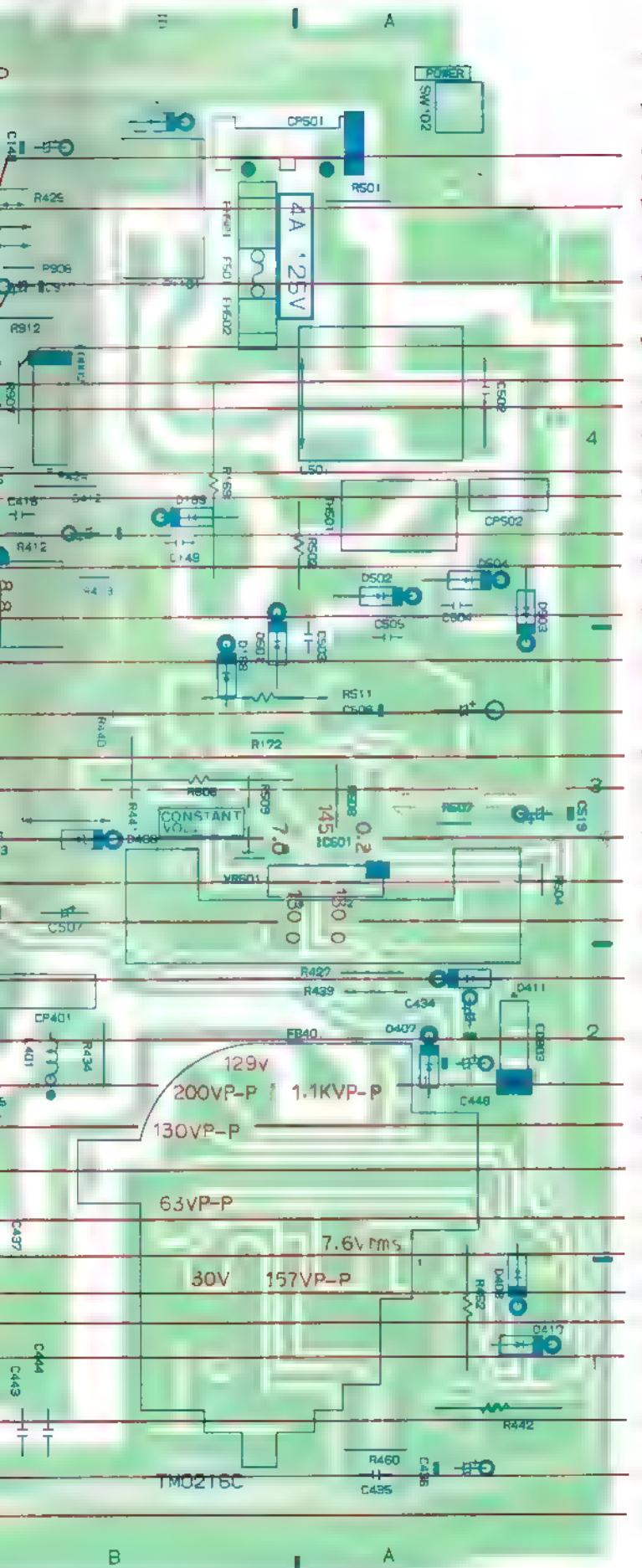


PRINTED CIRCUIT

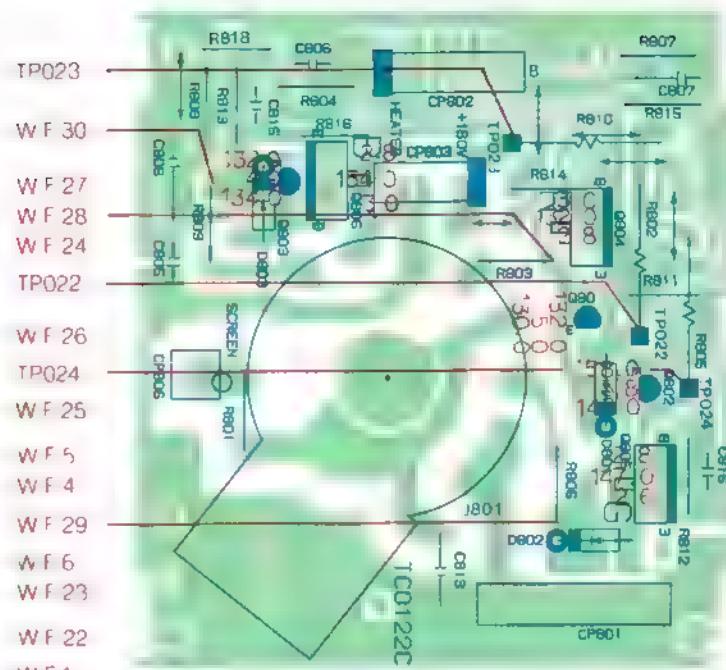
MAN



CIRCUIT BOARDS



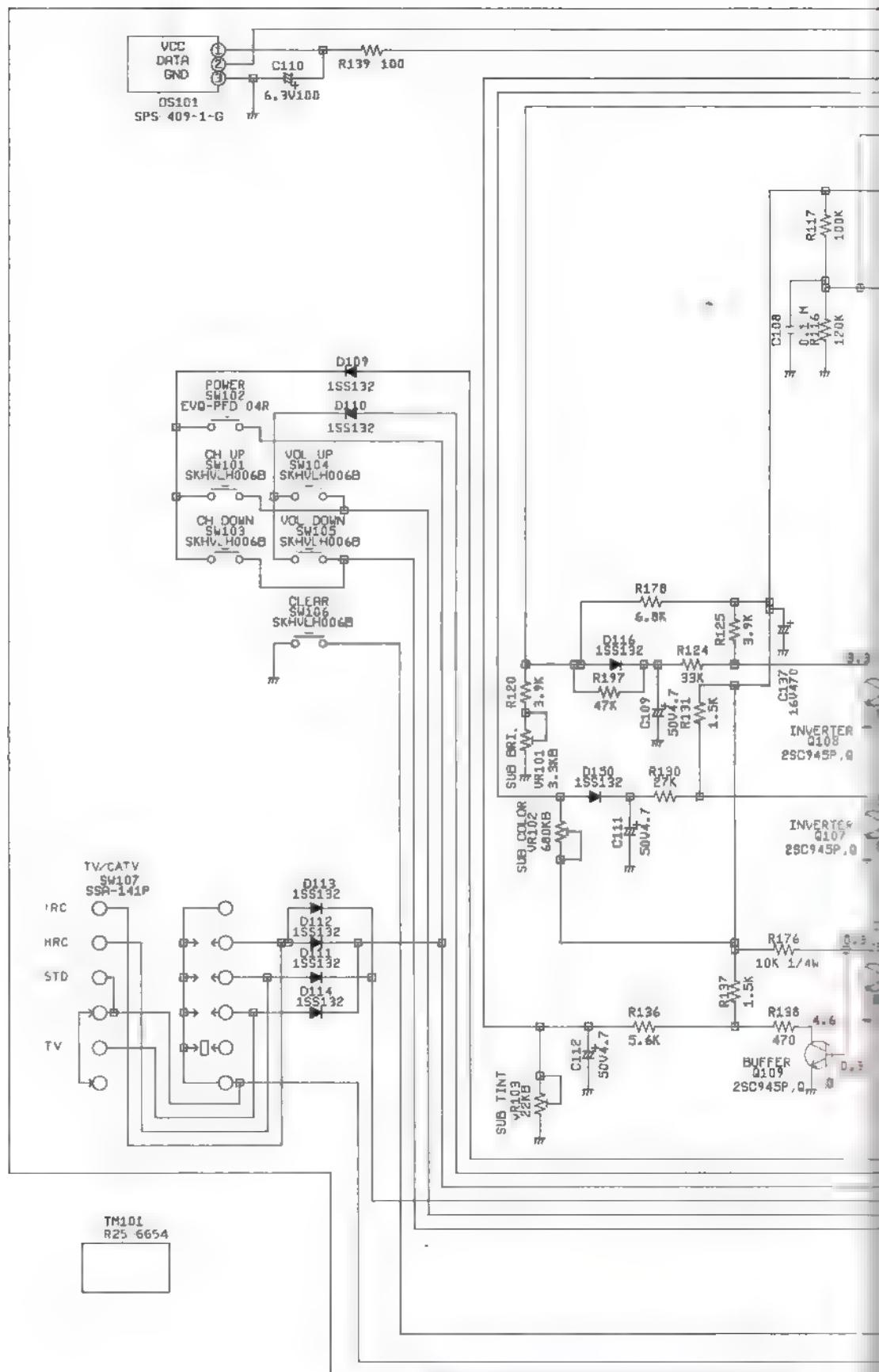
CRT



EARPHONE

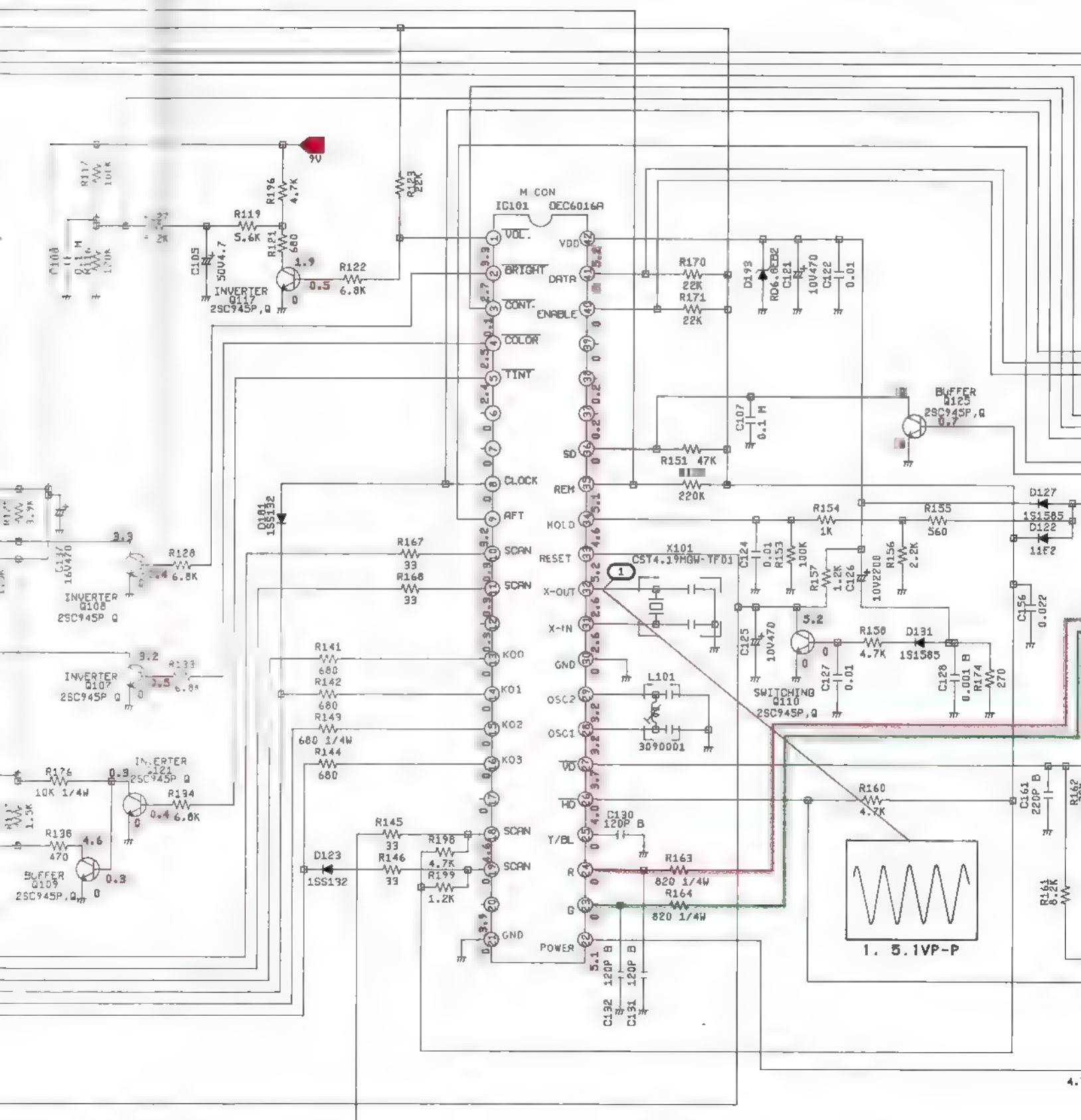


NOTE . W.F. WAVEFORM

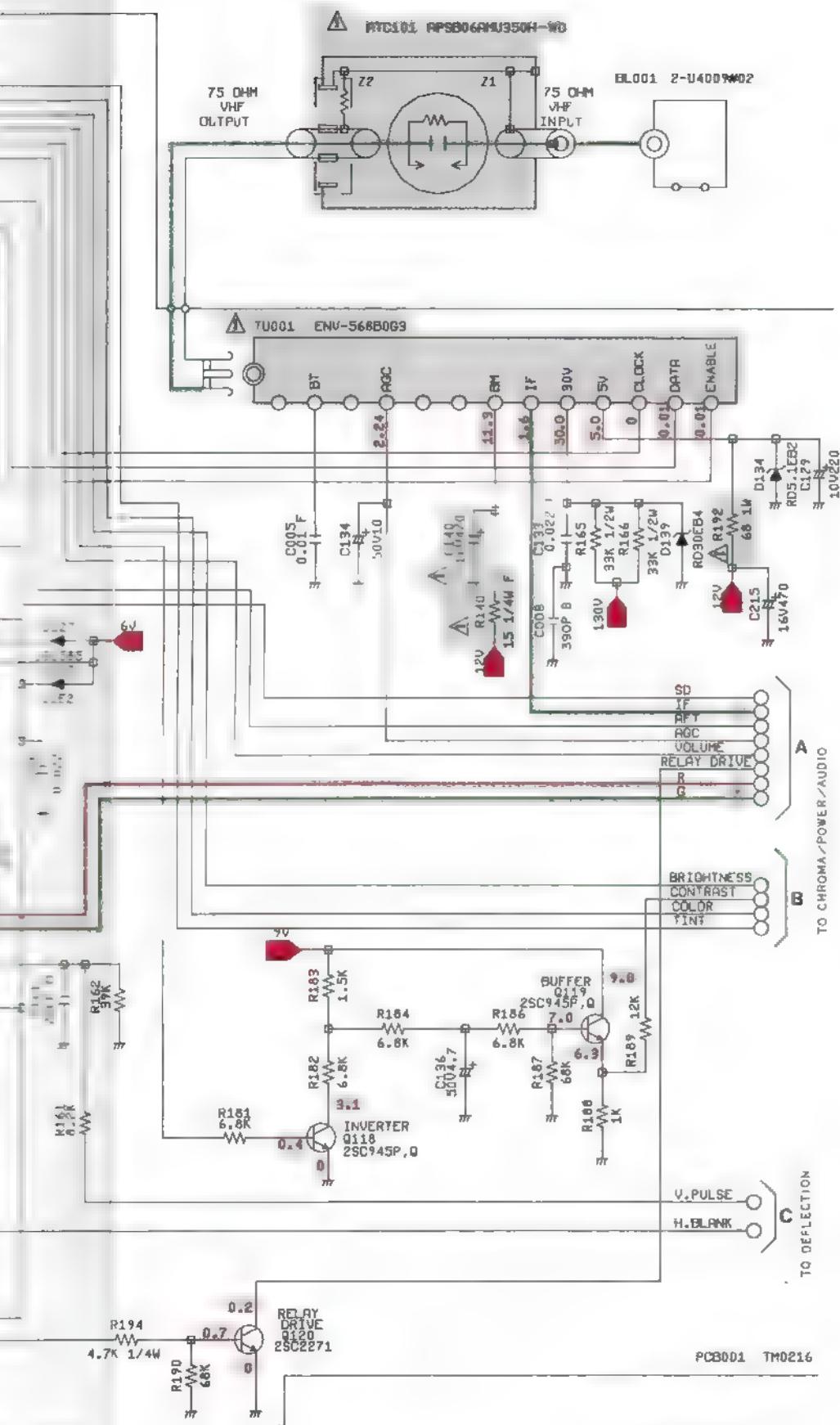


CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

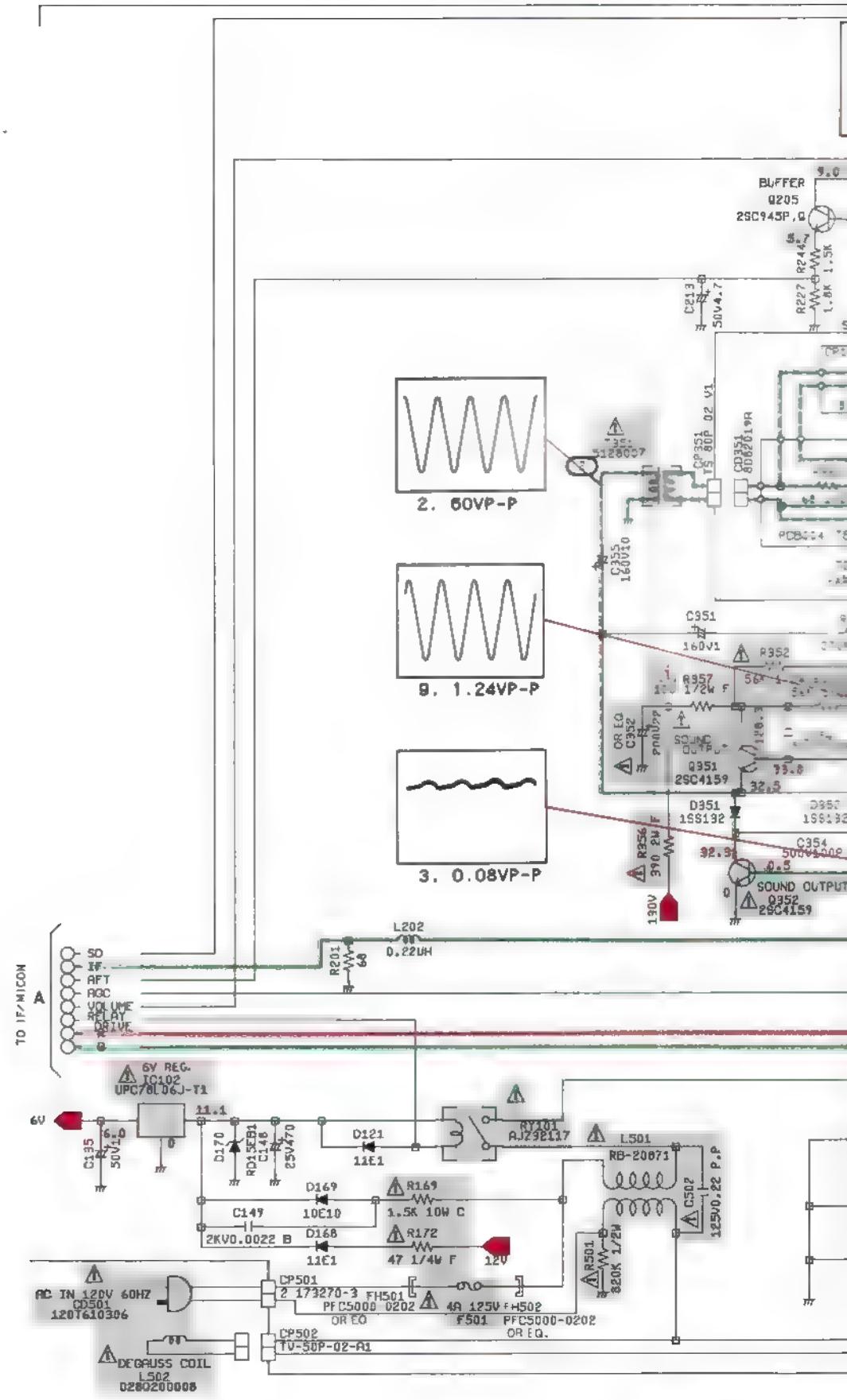
IF/MICON SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

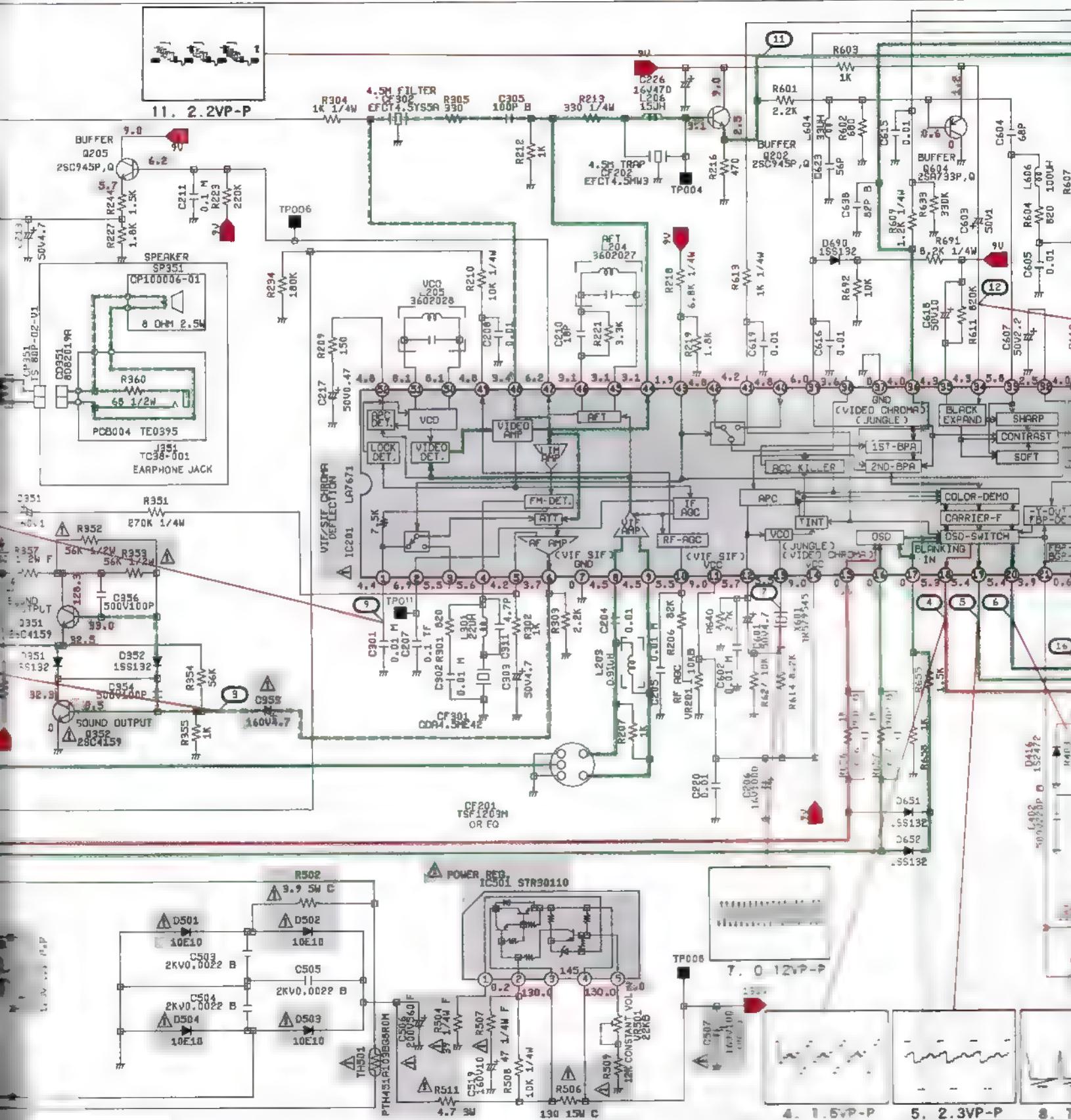


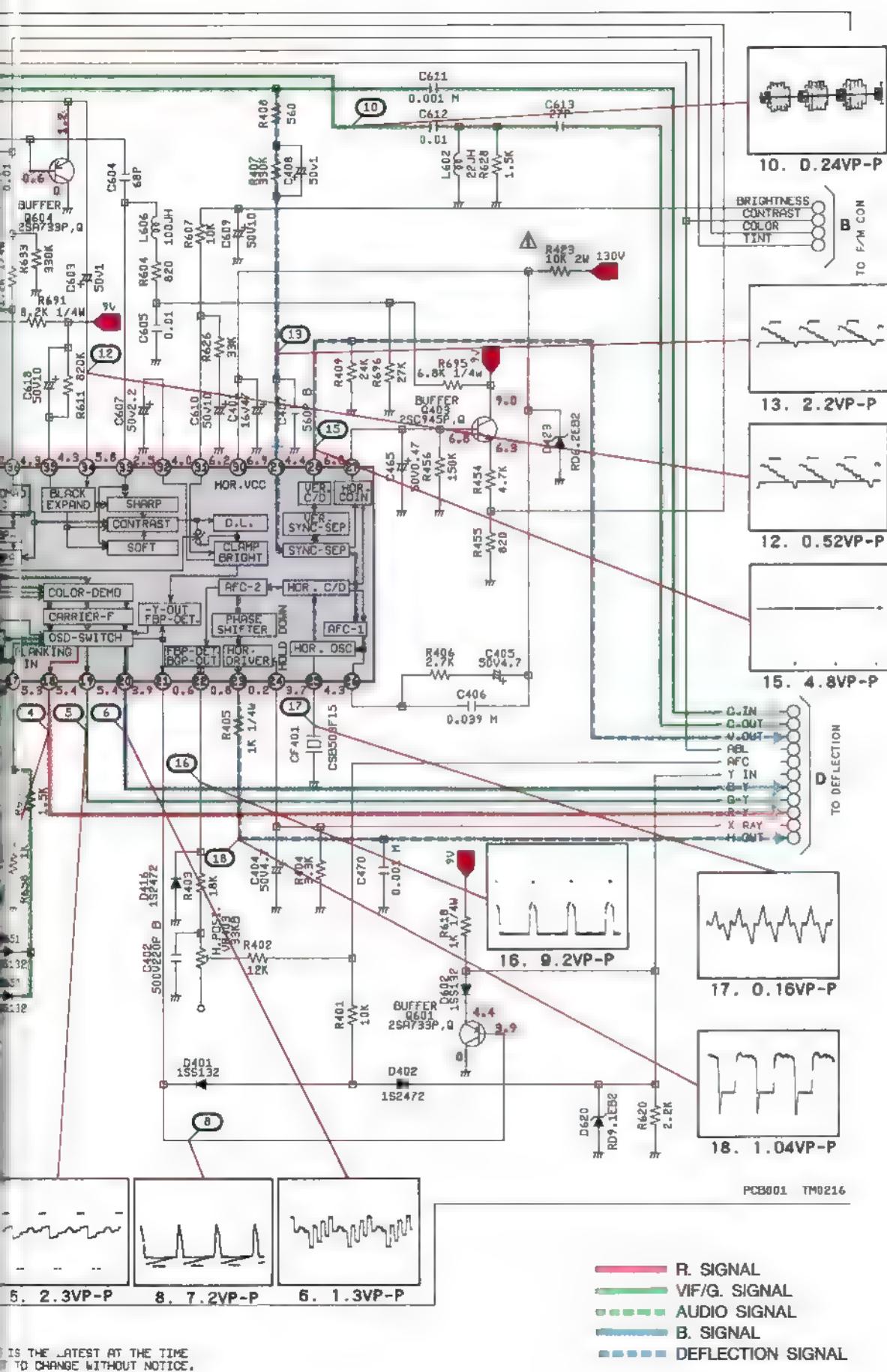
R. SIGNAL
VIF/G. SIGNAL



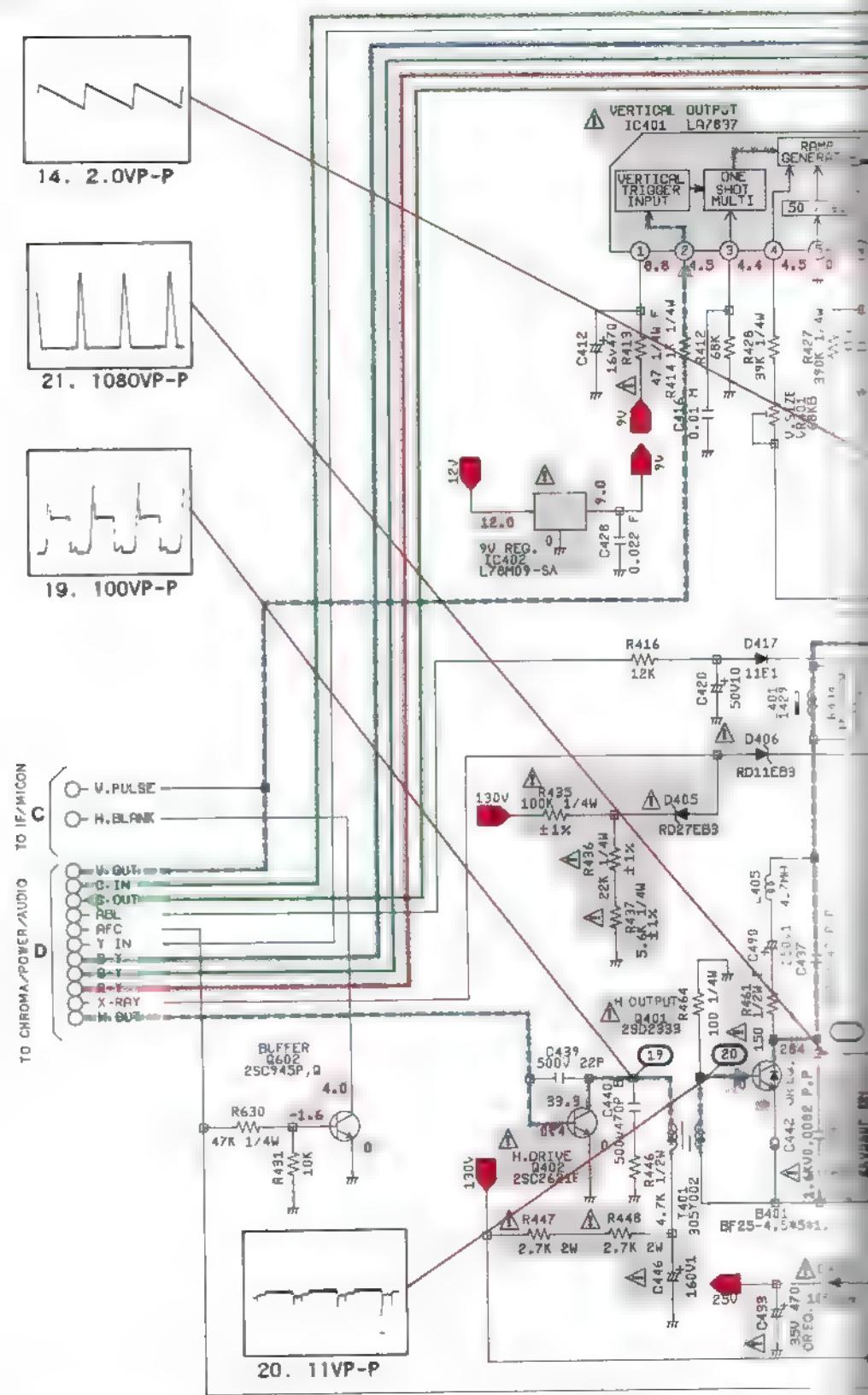
CAUTION: SINCE THESE PARTS
ARE CRITICAL FOR SAFETY,
THEY MUST BE INSTALLED
ACCORDING TO THE INSTRUCTIONS
DESCRIBED ON PAGE

CHROMA/ POWER/AUDIO SCHEMATIC DIAGRAM





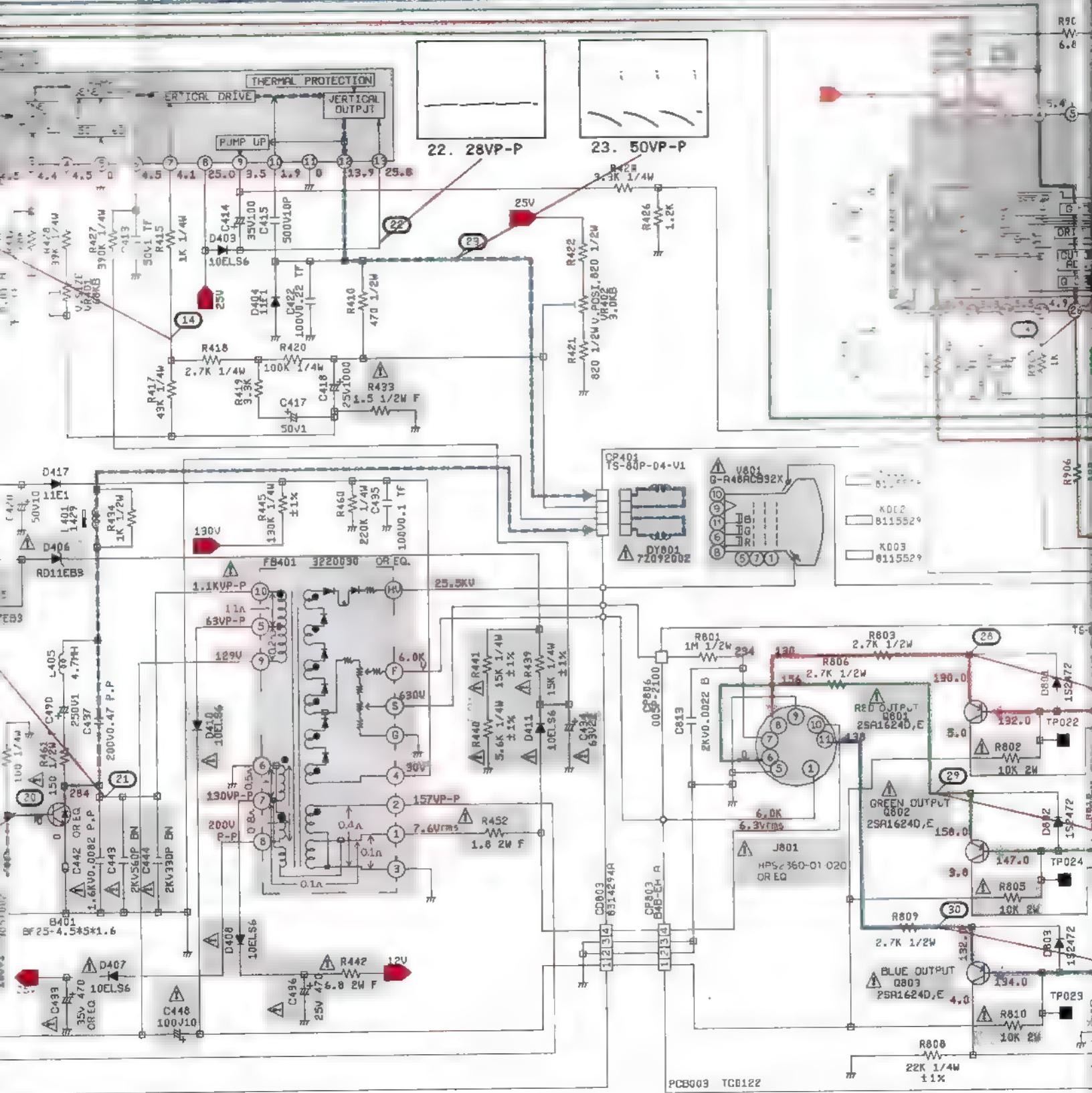
IS THE LATEST AT THE TIME
TO CHANGE WITHOUT NOTICE.



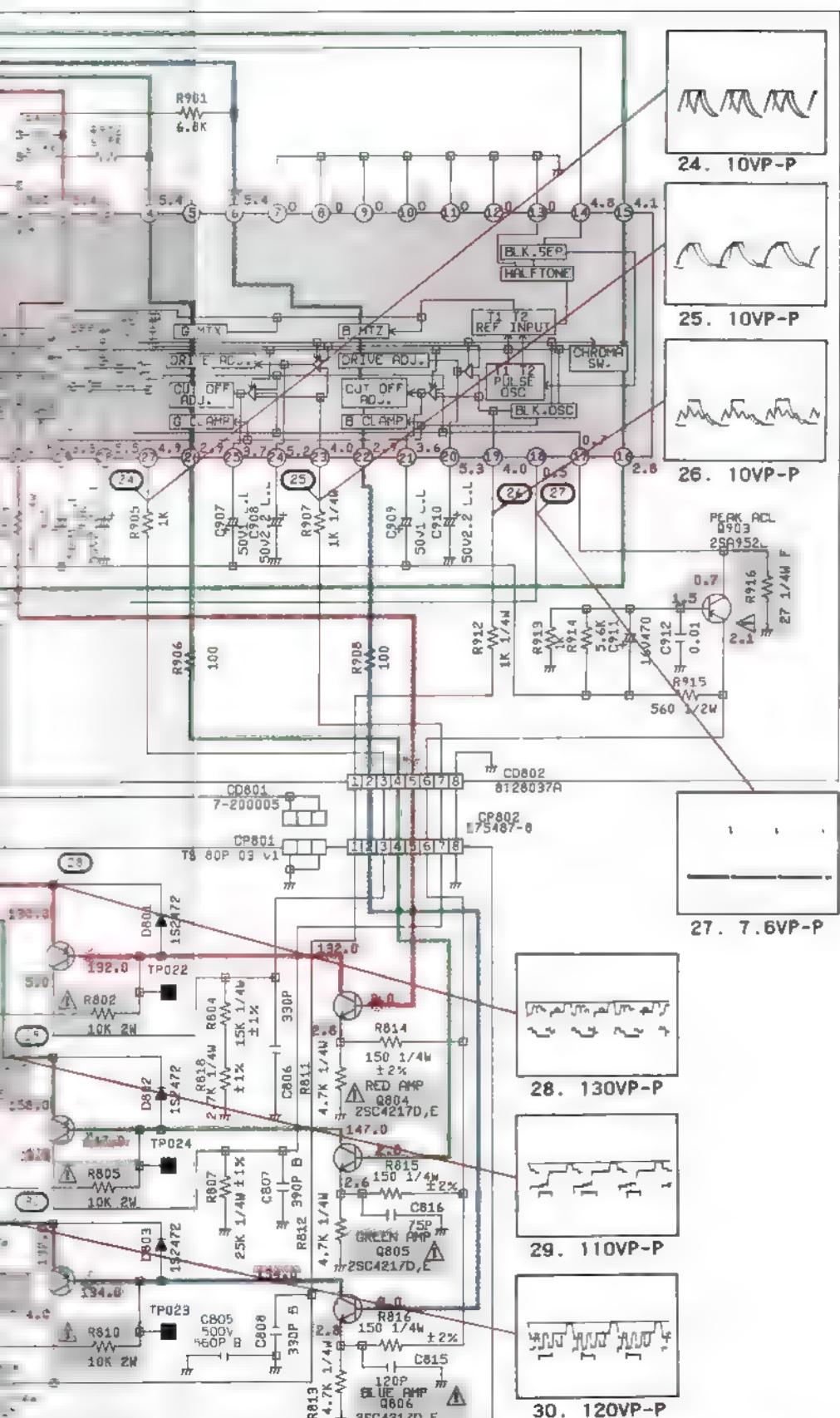
PCB001 TM0216

CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONLY THOSE DESCRIBED ON PARTS LIST ONLY.

DEFLECTION SCHEMATIC DIAGRAM



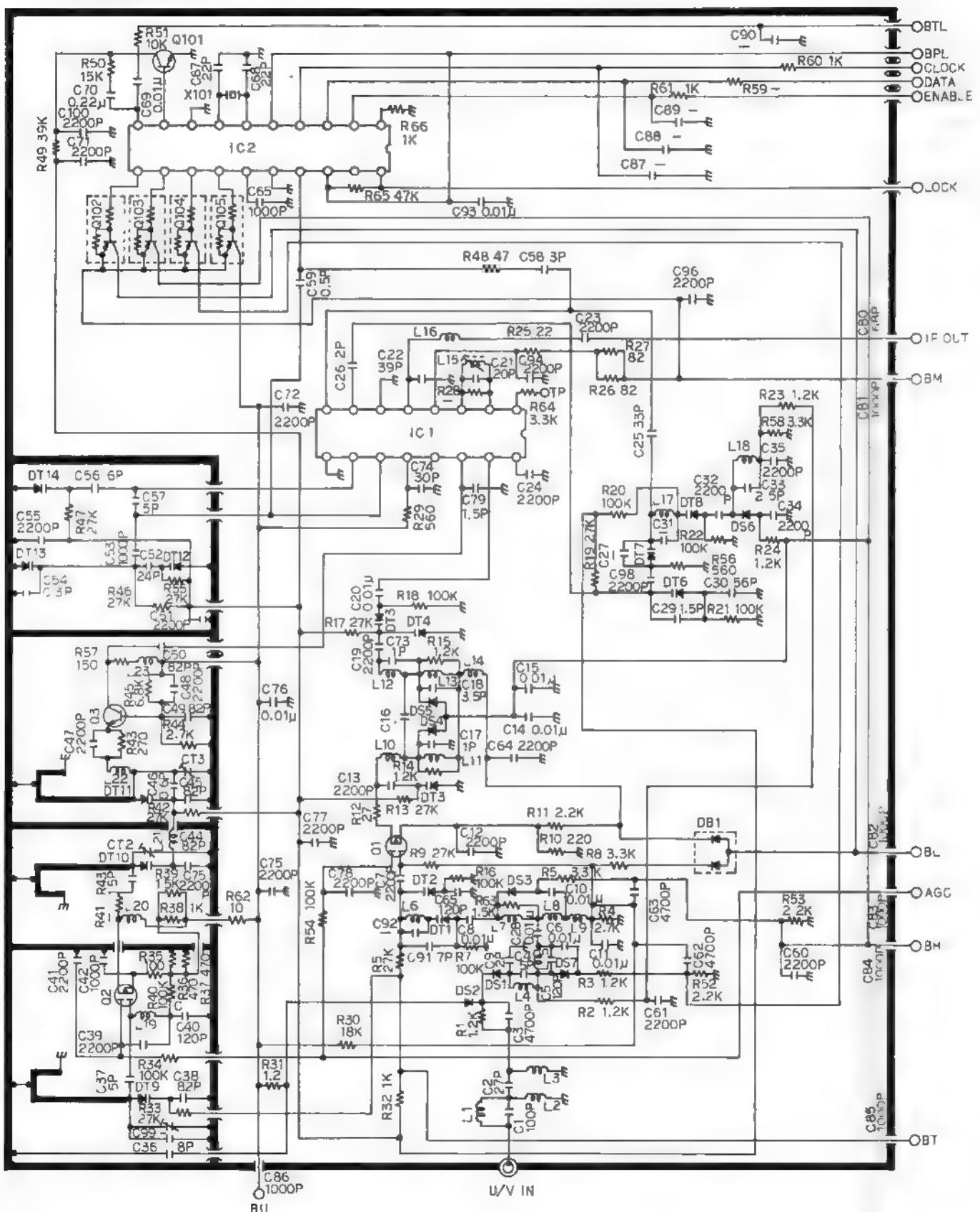
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE
TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.



R. SIGNAL
 G. SIGNAL
 B. SIGNAL
 DEFLECTION SIGNAL

TUNER SCHEMATIC DIAGRAM

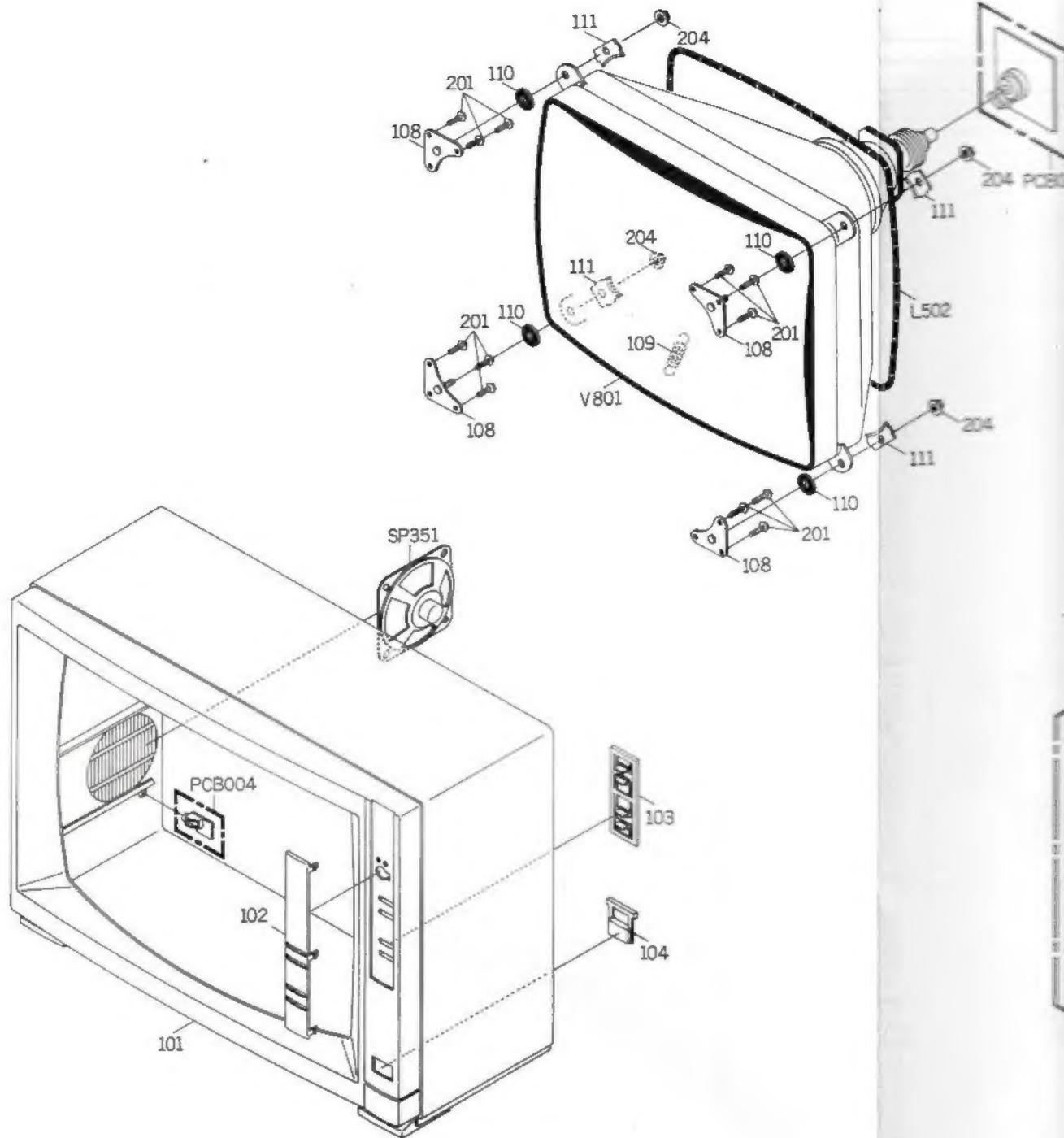
ENV-568B0G3



NOTE: Tuner parts are not available

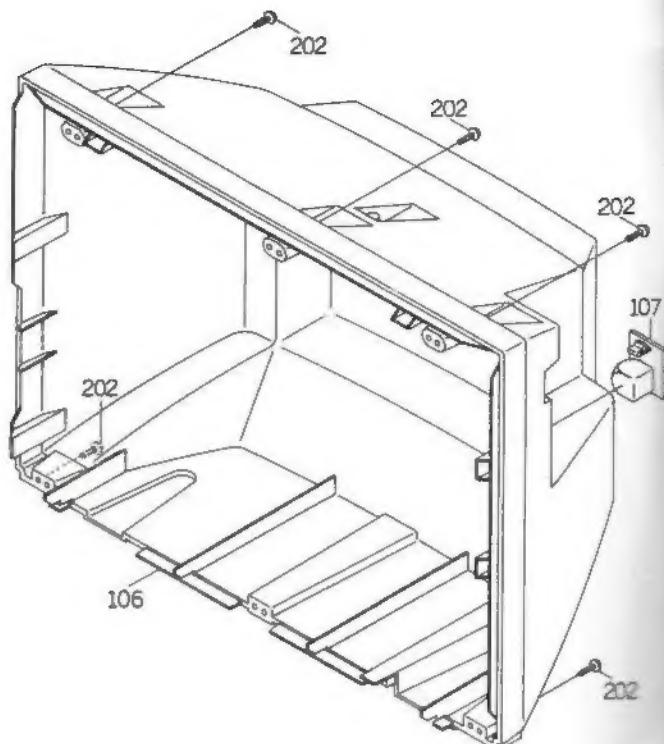
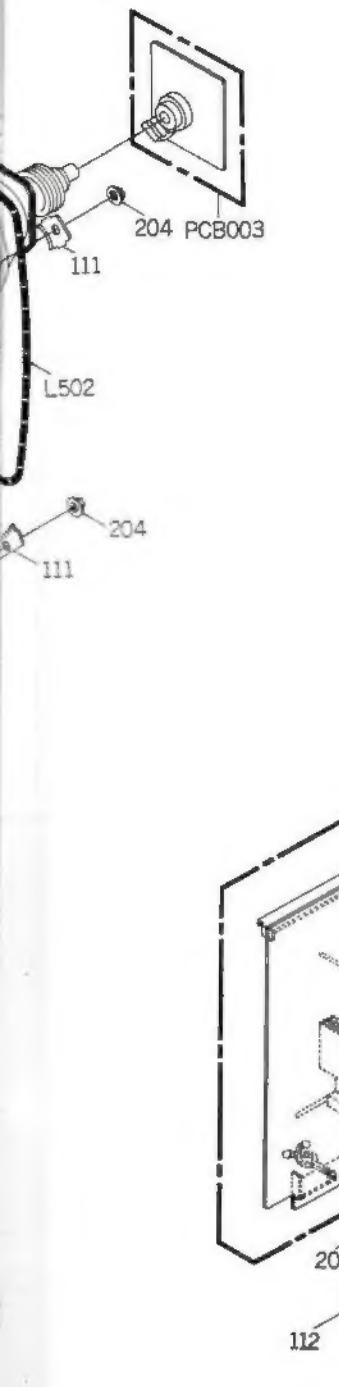
When repairs are required, order a complete replacement tuner.

MECHANICAL EXPLODED VIEW



REF. NO	PART NO	DESCRIPTION	REF. N
101	A39709A720 701APJ0028 7230003876 7240000737 7260000235 711AND0002	CABINET, FRONT ASS'Y CABINET, FRONT FILM, INFORMATION SHEET, FUSE SHEET, CRT SERVICEMAN PLATE, FRONT	201 202 203 204 205
102	735APA0005	BUTTON, CHANNEL/VOLUME	---
103	735APJ0002	BUTTON, POWER	---
104	733TPA0010	KNOB, SLIDE	---
105	702APA0031	CABINET, BACK	---
106	7222560503	SHEET, RATING	---
107	771TPA0018	PLATE, JACK	---
108	762TSA0018	ANGLE, CRT	---
109	741SUA0001	SPRING, EARTH	---
110	800AR00001	SHEET, CRT SUPPORT	---
111	761TSA0109	ANGLE, CRT SUPPORT	---
112	761TSA0158	ANGLE, FBT	---

XPLDED VIEW/ PARTS LIST



REF. NO	PART NO	DESCRIPTION	
201	8110240BD4	SCREW, TAP TITE(P) BIND	4*20
202	8117540A54	SCREW, TAPPING(BO) TRUSS	4*16
203	8107630654	SCREW, TAP TITE(S) BRAZIER	3*6
204	8300560254	SL NUT WH25	M6
205	8110630A24	SCREW, TAP TITE(P) BRAZIER	3*12
---	JEASTFA02	WARRANTY CARD	
---	JEASTFA17	REGISTRATION CARD	
---	JEASTFA36D	ESP BROCHURE	
---	JTVS00016	SAFETY INSTRUCTIONS	
---	J3970443	ACCESSORY ORDER FORM	
---	J3970901	INSTRUCTION BOOK	
---	759TPA0002	HOLDER ANODE LEAD	
---	791SHA0031	LAMIFILM.BAG	
---	792AHA0020	PACKAGE, TOP	
---	792AHA0021	PACKAGE, BOTTOM	
---	793ACD0243	GIFT-BOX	

ELECTRICAL REPLACEMENT PARTS LIST

THIS ELECTRICAL PARTS LIST IS A STANDARD PARTS LIST, BUT INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT. SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST.

REF. NO	PART NO	DESCRIPTION			REF. NO	PART NO	DESCRIPTION		
RESISTORS					SEMICONDUCTORS (CONT)				
R140	R615U4150J	R.FUSE	15	OHM 1/4W	D405	D92T0270B3	DIODE.ZENER	RD27EB	3 TA11R
R169	R5W2CF152J	R.CEMENT	1.5K	OHM 10W	D406	D92T0110B3	DIODE.ZENER	RD11EB	3 TA11R
R172	R615U4470J	R.FUSE	47	OHM 1/4W	D407	D28T10ELS6	DIODE.RECTIFIER	10ELS6TA1	
R192	R3B181680J	R.METAL OXIDE	68	OHM 1W	D408	D28T10ELS6	DIODE.RECTIFIER	10ELS6TA1	
R352	R002T2563J	RC	56K	OHM 1/2W	D410	D28T10ELS6	DIODE.RECTIFIER	10ELS6TA1	
R353	R002T2563J	RC	56K	OHM 1/2W	D411	D28T10ELS6	DIODE.RECTIFIER	10ELS6TA1	
R356	R6148A391J	R.FUSE	390	OHM 2W	D416	D1VT024720	DIODE.SILICON	1S2472T-77	
R357	R615U2101J	R.FUSE	100	OHM 1/2W	D417	D28T011E10	DIODE.SILICON	11E1TA1	
R360	R00202680J	RC	68	OHM 1/2W	D423	D92T06R2B2	DIODE.ZENER	RD6.2EB	2 TA11R
R413	R615U4470J	R.FUSE	47	OHM 1/4W	D501	D28T10E100	DIODE.SILICON	10E10-TA2B5	
R423	R3B18A103J	R.METAL OXIDE	10K	OHM 2W	D502	D28T10E100	DIODE.SILICON	10E10-TA2B5	
R433	R635821R5J	R.FUSE	1.5	OHM 1/2W	D503	D28T10E100	DIODE.SILICON	10E10-TA2B5	
R435	R425T4104F	R.METAL	100K	OHM 1/4W	D504	D28T10E100	DIODE.SILICON	10E10-TA2B5	
R436	R425T4223F	R.METAL	22K	OHM 1/4W	D602	D1VT001320	DIODE.SILICON	1S5132T-77	
R437	R425T4562F	R.METAL	5.6K	OHM 1/4W	D620	D92009R1B2	DIODE.ZENER	RD9.1EB	2
R439	R425T4153F	R.METAL	15K	OHM 1/4W	D651	D1VT001320	DIODE.SILICON	1S5132T-77	
R440	R425T4562F	R.METAL	5.6K	OHM 1/4W	D652	D1VT001320	DIODE.SILICON	1S5132T-77	
R441	R425T4153F	R.METAL	15K	OHM 1/4W	D690	D1VT001320	DIODE.SILICON	1S5132T-77	
R442	R6158A6R8J	R.FUSE	6.8	OHM 2W	D801	D1VT024720	DIODE.SILICON	1S2472T-77	
R447	R3B18A272J	R.METAL OXIDE	2.7K	OHM 2W	D802	D1VT024720	DIODE.SILICON	1S2472T-77	
R448	R3B18A272J	R.METAL OXIDE	2.7K	OHM 2W	D803	D1VT024720	DIODE.SILICON	1S2472T-77	
R452	R6158A1R8J	R.FUSE	1.8	OHM 2W	I1C01	I55D06016A	OEC6016A	MICRO	
R461	R615U2151J	R.FUSE	150	OHM 1/2W	I1C102	I02J98L060	UPCT8L06-T1	6V REGULATOR	
R501	R002T2824J	RC	820K	OHM 1/2W	I1C201	I03D67610	LA7671	VIF/SIF	CHROMA DEFLECTION
R502	R5W2CD3R9K	R.CEMENT	3.9	OHM 5W	I1C401	I03SD78370	LA7837	VERTICAL OUTPUT	
R504	R615U4390J	R.FUSE	39	OHM 1/4W	I1C402	I03B98M090	LA78M09-SA	9V REGULATOR	
R506	R5W2CG131J	R.CEMENT	130	OHM 15W	I1C501	I2849C1100	STR30110	POWER REGULATOR	
R507	R611U4470G	R.FUSE	47	OHM 1/4W	I1C901	I05DE87820	TA8782N	AUTOMATIC KINE BIAS	
R509	R001T6123J	RC	12K	OHM 1/6W	Q107	TCLT009450	2SC945A(C)-T	INVERTER	
R511	R4B28B4R7J	R.METAL	4.7	OHM 3W	Q108	TCLT009450	2SC945A(C)-T	INVERTER	
R802	R3B18A103J	R.METAL OXIDE	10K	OHM 2W	Q109	TCLT009450	2SC945A(C)-T	BUFFER	
R805	R3B18A103J	R.METAL OXIDE	10K	OHM 2W	Q110	TCLT009450	2SC945A(C)-T	SWITCHING	
R810	R3B18A103J	R.METAL OXIDE	10K	OHM 2W	Q117	TCLT009450	2SC945A(C)-T	INVERTER	
R816	R615U4270J	R.FUSE	27	OHM 1/4W	Q118	TCLT009450	2SC945A(C)-T	INVERTER	
CAPACITORS					Q119	TCLT009450	2SC945A(C)-T	BUFFER	
C140	E0E7T2471M	CE	470	UF 16V	Q120	TC3T022710	2SC2271(D.E)-AE	RELAY DRIVE	
C352	E027TC220M	CE	22	UF 200V	Q121	TCLT009450	2SC945A(C)-T	INVERTER	
C353	E0E5TB4R7M	CE	4.7	UF 160V	Q125	TCLT009450	2SC945A(C)-T	BUFFER	
C433	E02ST471M	CE	470	UF 35V	Q202	TCLT009450	2SC945A(C)-T	BUFFER	
C434	E0E7T6220M	CE	22	UF 63V	Q205	TCLT009450	2SC945A(C)-T	BUFFER	
C436	E0E7T3471M	CE	470	UF 25V	Q351	TC30041590	2SC4159(D.E)	SOUND OUTPUT	
C437	P441F2474J	CMPP	0.47	UF 200V	Q352	TC30041590	2SC4159(D.E)	SOUND OUTPUT	
C442	P412A9822H	CMPP	0.0082UF1.6KV	Q401	TDKF023330	2SD2333-(RQ)	H.OUTPUT		
C443	CODOBNTS2K	CC	560	PF 2KV	Q402	TC3002621E	2SC2621E	H.DRIVE	
C444	CODOBNTL2K	CC	330	PF 2KV	Q403	TCLT009450	2SC945A(C)-T	BUFFER	
C446	E0E5TB010M	CE	1	UF 160V	Q601	TALT007330	2SA733(C)-T	BUFFER	
C448	E0E7T8100M	CE	10	UF 100V	Q602	TCLT009450	2SC945A(C)-T	BUFFER	
C502	P2612A224M	CMP	0.22	UF 125V	Q604	TALT007330	2SA733(C)-T	BUFFER	
C506	E01LFC561M	CE	560	UF 200V	Q801	TA3T016240	2SA1624(D.E)-AA	RED OUTPUT	
C507	E027TB101M	CE	100	UF 160V	Q502	TA3T016240	2SA1624(D.E)-AA	GREEN OUTPUT	
C813	COJBB07H3K	CC	0.0022UF	2KV YB	Q803	TA3T016240	2SA1624(D.E)-AA	BLUE OUTPUT	
SEMICONDUCTORS					Q804	TC3F042170	2SC4217(D.E)-RAC	RED AMP	
D109	D1VT001320	DIODE.SILICON	1SS132T-77	D123	TC3F042170	2SC4217(D.E)-RAC	GREEN AMP		
D110	D1VT001320	DIODE.SILICON	1SS132T-77	D127	TC3F042170	2SC4217(D.E)-RAC	BLUE AMP		
D111	D1VT001320	DIODE.SILICON	1SS132T-77	D131	TALTO0952L	2SA952(C)-T L	PEAK ACL		
D112	D1VT001320	DIODE.SILICON	1SS132T-77	D134	COILS & TRANSFORMERS				
D113	D1VT001320	DIODE.SILICON	1SS132T-77	D139	L101	033090001M	COIL	3090001	
D114	D1VT001320	DIODE.SILICON	1SS132T-77	D150	L202	021JA6R22M	COIL	0.22 UH	
D116	D1VT001320	DIODE.SILICON	1SS132T-77	D168	L203	021S05R91K	COIL	0.91 UH	
D121	D28T011E10	DIODE.SILICON	11E1TA1	D169	L204	033602027G	COIL,VIDEO IFT	3602027	
D122	D28T011E20	DIODE.SILICON	11E2TA1	D170	L205	033602028G	COIL,VIDEO IFT	3602028	
D123	D1VT001320	DIODE.SILICON	1SS132T-77	D181	L206	021JA6150K	COIL	15 UH	
D127	D15T015850	DIODE.SILICON	1S1585(TPE3)	D193	L301	021JA6220K	COIL	22 UH	
D131	D15T015850	DIODE.SILICON	1S1585(TPE3)	D351	L401	022Z000008	COIL LINEARITY	1429	
D134	D92T05R1B2	DIODE.ZENER	RD5.1EB 2 TA11R	D352	L405	021679472K	COIL	4.7 MH	
D139	D92T0300B4	DIODE.ZENER	RD30EB 4 TA11R	D401	L501	0291000001	COIL LINE FILTER	RB-20871	
D150	D1VT001320	DIODE.SILICON	1SS132T-77	D402	L502	028Q200008	COIL,DEGAUSS	8Q200008	
D168	D28T011E10	DIODE.SILICON	11E1TA1	D403	L602	021JA6220K	COIL	22 UH	
D169	D28T010E100	DIODE.SILICON	10E10-TA2B5	D404	L604	021JA6330K	COIL	33 UH	
D170	D92T015081	DIODE.ZENER	RD15EB 1 TA11R	D405	L606	021JA6101K	COIL	100 UH	
D181	D1VT001320	DIODE.SILICON	1SS132T-77	D406	JACKS				
D193	D92006R6B2	DIODE.ZENER	RD6.8EB 2	D407	T351	045128007U	TRANS., SOUND OUTPUT	5128007	
D351	D1VT001320	DIODE.SILICON	1SS132T-77	D408	T401	03305Y002G	TRANS., HORIZONTAL DRIVE	305Y002	
D352	D1VT001320	DIODE.SILICON	1SS132T-77	D409	J351	060C121008	JACK, RCA 3.5	TC38-001	
D401	D1VT001320	DIODE.SILICON	1SS132T-77	D410	J801	0662130010	SOCKET,CRT	HPS2360-01-020	
D402	D1VT0024720	DIODE.SILICON	1S2472T-77						
D403	D28T10ELS6	DIODE.RECTIFIER	10ELS6TA1						
D404	D28T011E10	DIODE.SILICON	11E1TA1						

ELECTRICAL REPLACEMENT PARTS LIST

INTERCHANGEABLE PARTS LIST

NOTE: THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE ELECTRICAL REPLACEMENT PARTS LIST (WITH THE SAME REF. NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE. EITHER PART NUMBER MAY BE USED IN THIS UNIT.

REF. NO	PART NO	DESCRIPTION	
SWITCHES (CONT)			
SW101	0504201T30	SKHVLH006B	CH UP
SW102	0504101029	EVO-PFD 04R	POWER
SW103	0504201T30	SKHVLH006B	CH DOWN
SW104	0504201T30	SKHVLH006B	VOL. UP
SW105	0504201T30	SKHVLH006B	VOL. DOWN
SW106	0504201T30	SKHVLH006B	CLEAR
SW107	0510641004	SSA-141P	TV/CATV
VARIABLE RESISTORS			
VR101	V1162L3BT1	VR.SEMI-FIXED	3.3KB SUB BRIGHT
VR102	V1162U5BT1	VR.SEMI-FIXED	68KB SUB COLOR
VR103	V1162H4BT1	VR.SEMI-FIXED	22KB SUB TINT
VR201	V116314BT6	VR.SEMI-FIXED	10KB RF AGC
VR401	V1163U4BT6	VR.SEMI-FIXED	68KB V.SIZE
VR402	V1F5233BF7	VR.SEMI-FIXED	3KB V.POSITION
VR403	V1163L4BT6	VR.SEMI-FIXED	33KB H.POSITION
VR501	V1263H4BT7	VR.SEMI-FIXED	22KB CONSTANT VOL.
P.C. BOARD ASSEMBLIES			
PCB001	A39709A01A	PCB ASS'Y	TM0216-Z1 MAIN
PCB003	A39709A11A	PCB ASS'Y	TC0122 CRT
PCB004	A39709A27A	PCB ASS'Y	TE0395 EARPHONE
MISCELLANEOUS			
△ ATC101	0633300008	ANT SHIELD BOX	APSB06ANU350H-WD
B401	0246451652	CORE, BEADS	BF25-4.5*5*1.6
BL001	0638200015	PLUG-FJ	2-U4009#02
CD351	066802019A	CORD CONNECTOR	8D62019A
CD501	120T610306	CORD AC	120T610306
CD601	12TA200005	BRAIDED WIRE	7-200005
CD602	068128037A	CORD, CONNECTOR	8128037A
CD603	068314294A	CORD, CONNECTOR	8314294A
CF201	1028045R73	FILTER, SAW	TSF1203M
CF202	1011T4R507	FILTER, CERAMIC	EFC-T4R5MW3
CF301	1012A4R504	FILTER, CERAMIC DISCR.	CDA4.5ME42
CF302	1011T4R504	FILTER, CERAMIC	EFCT4R5YSSA
CF401	1002R50303	CERAMIC, OSCILLATOR	CSB503F15
CP351	0689D320018	CONNECTOR PCB SIDE	TS-80P-02-V1
CP401	068D340018	CONNECTOR PCB SIDE	TS-80P-04-V1
CP501	0694430100	CORD, UX CONNECTOR	2-173270-3
CP502	069D420029	CONNECTOR PCB SIDE	TV-50P-02-A1
CP801	069D330018	CONNECTOR PCB SIDE	TS-80P-03-V1
CP802	0694280369	CONNECTOR PCB SIDE	175487-8
CP803	069X140199	CONNECTOR PCB SIDE	B4B-EH-A
CP806	069D010010	CONNECTOR PCB SIDE	005P-2100
△ DY601	0272092002	DEFLECTION YOKE	7Z092002
△ F501	081DC04003	FUSE	4A 125V
△ FB401	0432200301	TRANSFORMER, FLYBACK	3220030
FH501	06760T0001	HOLDER, FUSE	PFC5000-0202
FH502	06760T0001	HOLDER, FUSE	PFC5000-0202
K001	129A000010	WEDGE	8115529
K002	129A000010	WEDGE	8115529
K003	129A000010	WEDGE	8115529
QS101	077S013001	REMOTE RECEIVER	SPS-409-1-G
△ RY101	0560120108	RELAY	AJZ32117
SP351	070R143005	SPEAKER	CP100006-01
△ TH501	D8ROBG8ROM	DEGAUSS ELEMENT	PTH451A103BG8ROM
TM101	076MO12160	TRANSMITTER	R25-5654
△ TU001	0145500028	TUNER, UHF-VHF	ENV-568B0G3
△ V801	0922Z00411	CRT	G-A48ACB32X
X101	1002T4R102	CERAMIC OSCILLATOR	CST4.19MGW-TF01
X601	100C357903	CRYSTAL HC-49/U	3.579545MHZ

RESISTOR

RC.....CARBON RESISTOR

CAPACITORS

CC.....	CERAMIC CAPACITOR
CE.....	ALUMI ELECTROLYTIC CAPACITOR
CP.....	POLYESTER CAPACITOR
CPP.....	POLYPROPYLENE CAPACITOR
CPL.....	PLASTIC CAPACITOR
CMP.....	METAL POLYESTER CAPACITOR
CML.....	METAL PLASTIC CAPACITOR
CMPP.....	METAL POLYPROPYLENE CAPACITOR
CST.....	STYROL CAPACITOR

REF. NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
△ C352	22 UF 200V (E027TC220M)	22 UF 200V (E031TC220M)
△ C433	470 UF 35V (E02ST4471M)	470 UF 35V (E03YT4471M)
△ C442	0.0082UF 5KV (P412A9822H)	0.0052UF 1600V (P442A9822H)
△ C507	100 UF 160V (E027TB101M)	100 UF 160V (E011TB101M)
CF201	TSF1203M (1028045RT1)	TSF1203C (1028045RT2)
△ FB401	3220030 (0432200301)	3220030 (043220030M)
FH501	PFC5000-0202 (06760T0001)	EYF-52BC (06710T0006)
FH502	PFC5000-0202 (06760T0001)	EYF-52BC (06710T0006)
△ J801	CVT3245-0521 (0666130012)	HPS2360-01-020 (0662130010)

THE LISTED PARTS ARE INTERCHANGEABLE WITH ONE COMPLETE BLOCK AS FOLLOWS.

REF. NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
CF401	CSB503F15 (1002R50303)	CSB503F45 (1002R50304)
△ IC201	LA7671 (103DE76710)	LA7671N (103DE7671N)
R640	2.7M OHM 1/6W (R001T6275J)	